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08-15-2009, 11:13 AM #1

ShawnV
Master Member

Join Date: Aug 2007
Location: Greensboro, NC
Posts: 2,680

ShawnV's Photos

2000 SW2

1997 Fuel pump replacement

Here is a how-to guide to replacing a fuel pump in a Saturn S-Series.
My 1997 SW2 was starting hard and there was no fuel pressure when the key was off (not holding pressure) and there was weak pressure with the key on (engine off). I'd like to acknowledge and thank OldNuc for his help with my fuel pump diagnosis and replacement.

First get the car up on ramps. Jack stands are not suggested for this repair. Disconnect the negative battery connection. Release any pressure at the Schrader valve on the fuel lines (before fuel rail). Mine of course had no pressure so I skipped this step.

Next, open the fuel door and take the fill cap and the grommet off. Remove the 10mm bolt holding the filler pipe to the frame.

Remove the inner wheel lining connector pin closest to the ground (rear of the car).
Remove the filler pipe lower bracket attachment screw (10mm). You can see the two pipes in the photo below. The larger is the filler pipe and the smaller is the vent pipe.

Next, loosen the hose clamps on the filler and vent pipes closest to the fuel tank, not the ones seen above. These are 7mm. If your car is a 1998-2001 you'll also need to remove the filter/pressure regulator.

Use the wiggle room you just created in the filler/vent pipes to slide each pipe off of the fuel tank. Once they're off, just move them out of the way but don't remove them from the car. Now is a good time to siphon any remaining fuel out of the tank. I had a crappy siphon pump and couldn't get about 5 gallons out of the tank. This made removing the tank a pain!
Once the fuel is drained from the fuel tank, loosen the fuel tank strap bolts. These are 15mm and I needed a universal, or wobble, extension for one since I could not get a strait angle to it. Note the filler and vent nipples with their hoses removed in the photo below.

Remove the bolts, lower the straps, and lower the tank slightly in the front. The filler and vent nipples will hold the tank on the rear. I used this time to disconnect the fuel lines on the driver's side of the car.

I also disconnect the electrical connection to the fuel pump. Stick your flathead in there and relieve the retaining clip and the connection will pop off.

At this point I had the front of the tank propped up on a block.

The fuel tank would not lower from the rear end because the filler and vent nipples prevented that. I had to take the front end of the straps off and lower it from the front. This was a huge pain, since I could not get the remaining ~5 gallons out of the tank.

Once off, the tank is amazingly small and dirty.

There is a retaining clip that needs to be twisted counter clockwise to release the fuel pump. Saturn sells a special tool for this application (SA9156E). However, I simply used my hammer and flathead and slowly worked my way around the ring tapping and loosening. There is a nice picture of this step in my Chilton's manual. They recommend using a brass punch to avoid a possible spark. It came off with no problems.

At this point the fuel pump will raise out after you break it loose from the O-ring it's seated on. Pull up on the pump and when you reach the float, angle the pump while lifting and the assembly will come out.

You can see that I had tons of rust and dirt, so I cleaned everything up and rinsed out my tank with gas before replacing the new pump.

The new pump assembly came with a new O-ring and grease. I greased up the tank where the O-ring seats and installed the O-ring. Saturn recommends using the newer, Green O-ring instead of the older, Black one.

To install the new pump simply angle it so the float goes in then angle the pump vertical and install. There is a spring on the pump and it will hit the bottom of the fuel tank before the top fully seats. At this point make sure the fuel lines coming off the pump are pointed in the correct direction and then reinstall the retaining ring. Gently push down on the top of the fuel pump until it seats. I placed the ring over the pump and gently tapped with my hammer and flathead until the ring was properly seated.

Next, make sure your fuel line connections off the new fuel pump will mate up with those on the car. I had to remove a clip from the old fuel pump.
Reinstall everything.

After everything's reinstalled, add some fuel to the tank. Lower the car off the ramps. Switch the key to the on position and let the pump prime for 10 seconds. Turn the key off. Repeat 1 or 2 more times then try and start the car. Allow several extra seconds of cranking.

I attempted this before the car was off the ramps and it wouldn't start because I didn't have enough fuel in the tank.

Once the car is started, turn it off and check all fuel lines for leaks. Crank the car up again and drive to your closest gas station for a fill-up. You'll never have put so much gas in your tank as you will with this fill-up!

Some notes:
I would suggest running your car until at least the Low Fuel light comes on.
As always, use 6-point sockets.
Keep rags and pans around because you will get fuel leaking when you disconnect lines.

REWARD EXCELLENCE!

Rate the quality of this post and help *ShawnV* reputation points. Click the reputation button near the bottom left corner of this message box. Thank you!

quote

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08-15-2009, 08:50 PM #2

off-track
Master Member

Join Date: Dec 2007
Location: Madison, Wi
Posts: 3,093

off-track's Photos

1997 SL2

Re: 1997 Fuel pump replacement

Excellent write-up Shawn! I don't remember seeing one here before?

Just a couple of things..

Did you replace the lines from the pump or are they just cleaned? From the pics they appear new?

There are three lines coming from the pump and only two shown in the pictures? Any issues with the connections? I don't see any clamps on most of the pipes. Are they all just barbed connections? .. OK, check that.. I just looked at RA an I see that you can just get the pump itself or the full assembly along with the hoses. I'm guessing that's what you did (full)? Given that.. have you ripped the old one apart to see what the problem really was (ie, pump vs check valve as reported for the '97's)?

What's difference with the "black vs green" o-ring? Did the replacement pump come with both?

It would have been nice to see a pic of the pump/float itself.. too late now I guess. Good job, maybe I should just bite the bullet..

...
1997 - SL2, barebones, 161k, Auto - Rebuild complete and.. burnt a valve 20k later Arrgh!
Purchased 114k 10/07
Added OEM CC

REWARD EXCELLENCE!

Rate the quality of this post and help *off-track* reputation points. Click the reputation button near the bottom left corner of this message box. Thank you!

quote

08-15-2009, 08:55 PM #3

Growser
Advanced Member

Re: 1997 Fuel pump replacement

Very Excellent post! One other suggestion though, whenever working with gasoline like this it's a very good idea to have a fire extinguisher at the ready.

Join Date: Aug 2008
Location: New Prague, Minnesota
Posts: 958

Growser's Photos

2002 SL2
2000 SL1

...
7 Saturn Car Family with + 900,000 miles.
2002 SL2, 2000 SL1, 1997 SC2, 1997 SC1, 1996 SC1, 1994 SC2, and now a 93 SC2 project car.

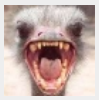
REWARD EXCELLENCE!

Rate the quality of this post and help *Growser* reputation points. Click the reputation button near the bottom left corner of this message box. Thank you!

quote

08-15-2009, 09:35 PM #4

spiderpig24
Member



Join Date: Jul 2009
Location: York PA
Posts: 207

1994 SL1

Re: 1997 Fuel pump replacement

Nice write up, great pics, congrats on this! Thanks and I might have to come back at sometime to actually do this work on my SL

REWARD EXCELLENCE!

Rate the quality of this post and help *spiderpig24* reputation points. Click the reputation button near the bottom left corner of this message box. Thank you!

quote

08-15-2009, 09:50 PM #5

ShawnV
Master Member

Join Date: Aug 2007
Location: Greensboro, NC
Posts: 2,680

ShawnV's Photos

2000 SW2

Re: 1997 Fuel pump replacement

Quote:

> Originally Posted by **off-track**
> *Excellent write-up Shawn! I don't remember seeing one here before?*
>
> *Just a couple of things..*
>
> *Did you replace the lines from the pump or are they just cleaned? From the pics they appear new?*
>
> *There are three lines coming from the pump and only two shown in the pictures? Any issues with the connections? I don't see any clamps on most of the pipes. Are they all just barbed connections? .. OK, check that.. I just looked at RA an I see that you can just get the pump itself or the full assembly along with the hoses. I'm guessing that's what you did (full)? Given that.. have you ripped the old one apart to see what the problem really was (ie, pump vs check valve as reported for the '97's)?*
>
> *What's difference with the "black vs green" o-ring? Did the replacement pump come with both?*
>
> *It would have been nice to see a pic of the pump/float itself.. too late now I guess. Good job, maybe I should just bite the bullet..*

You are correct that there isn't a how-to for fuel pumps. OldNuc was kind enough to send me some instruction/diagrams and I figured the rest out as I went. I wanted to thank him and the entire community by taking the time to share my experience and create a how-to for others who might be overwhelmed by the thought of dropping the fuel tank.

Those three fuel lines came with the new pump assembly. There were no issues with the connections and you can only see two of the three lines in the photo.

You guessed it. I bought the whole pump assembly. It came with a Green O-ring and my directions do say "use the green one instead of the black one"

I did not take apart the old pump. I threw it in the trash can and moved on with my life. The sending unit/float (gas gauge) still worked, but I just wanted to replace the whole assembly and not think about it again.
My original problem was that the guy I bought the car from never replaced the fuel filter. After 187k my pump was weak and not holding pressure. When I took it out there was brown, dirty gas leaking out of it.

I could have bought just the pump itself and save money, but my Saturn is a great car and I don't mind spending a few extra bucks to get the job done. My mechanic wanted $670 for this repair. I got away with a $240 part from Napa and I feel like I'm ahead.

Growser, You're completely right about having an extinguisher on hand. I keep a couple in my garage so I never even thought of mentioning that. Thanks!

Last edited by ShawnV; 08-15-2009 at 10:03 PM..

REWARD EXCELLENCE!

Rate the quality of this post and help *ShawnV* reputation points. Click the reputation button near the bottom left corner of this message box. Thank you!

quote

08-16-2009, 12:51 AM #6

eve6er69
Junior Member

Join Date: Aug 2009
Posts: 21

Re: 1997 Fuel pump replacement

I wish I had this write up when I did my pump on my 97 in 04.
I did it and everytime I topped off at the pump I would leak fuel. I thing the gasket saturn gave me was bad.
Either way awesome write up!!

REWARD EXCELLENCE!

Rate the quality of this post and help *eve6er69* reputation points. Click the reputation button near the bottom left corner of this message box. Thank you!

quote

10-08-2009, 05:02 PM #7

RobertGary1
Master Member

Join Date: Jun 2005
Location: Sacramento
Posts: 4,219

RobertGary1's Photos

1996 SC2
2006 VUE 3.5L

Re: 1997 Fuel pump replacement

One other suggestion. I always place jack stands under the car while its on the ramps if I'm going to be under it. Its always good to have a back up to prevent yourself from getting crushed if the ramps fail.

-Robert

REWARD EXCELLENCE!

Rate the quality of this post and help *RobertGary1* reputation points. Click the reputation button near the bottom left corner of this message box. Thank you!

quote

04-10-2010, 03:16 PM #8

mrbios
Member

Join Date: Sep 2005
Location: San Diego, CA
Posts: 187

1997 SW2

Re: 1997 Fuel pump replacement

I have a red 1997 SW2 and I suspect the fuel pump. The pressure is ok while is running but when I shut if off it falls to zero in about 30 seconds. There are no leaks. I also failed to change the original fuel filter until about 70 or 90K. I also have trouble starting unless I turn the key on and wait a few seconds for it to pump up then it starts right away.

Also, I get occassional misfires or a sudden drop in power followed by a lurch - did you have any such problems? I changed the wires and plugs, fuel filter etc but nothing helps.

Thanks for a great write up.

REWARD EXCELLENCE!

Rate the quality of this post and help *mrbios* reputation points. Click the reputation button near the bottom left corner of this message box. Thank you!

quote

11-01-2011, 10:21 AM #9

bigbfarm
Member

Join Date: Jan 2007
Location: Annandale, MN
Posts: 266

bigbfarm's Photos

1996 SL2
1997 SW2

Re: 1997 Fuel pump replacement

Great write up, Thanks. Just replaced my 97 sw2 with a Carter pump. Solved the fuel pressure drop (key on, pressure at 40, pump stops pressure plummets to zero).

I put my rear on ramps and raised front on jack stands. This gave me just enough room to remove tank. Living in rust belt I did not want to remove hinged side of straps.

Be careful of new fuel pump orientation. I thought I had it aligned right but after installing tank, straps, filler hose I discovered I was about an inch short for fuel line connections. Had to drop tank again and pivot pump a few degrees.

I also had a pump siphon. Looked like a pump weed sprayer. Was able to pump all but maybe a quart or less out with no effort. Highly recommend.
Lesson I keep learning is you need to have the right tools.

Thanks for the how-to.

REWARD EXCELLENCE!

Rate the quality of this post and help *bigbfarm* reputation points. Click the reputation button near the bottom left corner of this message box. Thank you!

quote

11-01-2011, 08:59 PM #10

ShawnV
Master Member

Join Date: Aug 2007
Location: Greensboro, NC
Posts: 2,680

ShawnV's Photos

2000 SW2

Re: 1997 Fuel pump replacement

I'm glad it helped! This how-to is somewhat of a classic by now

REWARD EXCELLENCE!

Rate the quality of this post and help *ShawnV* reputation points. Click the reputation button near the bottom left corner of this message box. Thank you!

quote

12-18-2011, 08:53 AM #11

bobbyrae
Member

Join Date: Oct 2005
Location: Alameda, CA
Posts: 445

bobbyrae's Photos

1993 SL2

Re: 1997 Fuel pump replacement

> Quote:
> First get the car up on ramps. Jack stands are not suggested for this repair.

I am curious why this is. I only have jack stands, no ramps. Is that a serious problem?

...
Bobby Rae
Alameda, CA
1993 SL2 A/T, 80k miles, 22/33/43 mpg
1982 Accord 5-speed, 303k miles, 23/32/40 mpg

REWARD EXCELLENCE!

Rate the quality of this post and help *bobbyrae* reputation points. Click the reputation button near the bottom left corner of this message box. Thank you!

quote

12-18-2011, 09:12 AM #12

fetchitfido
Super Member

Join Date: May 2006
Posts: 14,405

fetchitfido's Photos

2001 SC2

Re: 1997 Fuel pump replacement

I don't see how you could do this with ramps. I had to get both a '93 SL2 and my '96 SC2's back end nearly 3ft in the air to get the tank out so I could swap it. Maybe didn't have to, but it didn't just fall out because the straps got in the way at 'ramp height' so I kept raising it higher, then didn't bother finding a different way for the SC2.

I didn't even know you could/should disconnect at the filler end.

Only took a bit over an hour to swap tanks. That one bolt that's 1/4 hidden is freaking annoying without anything to angle the socket from the extension.

...
The proper way to fix a S-Series automatic is to replace it with a 5spd O:)

REWARD EXCELLENCE!

Rate the quality of this post and help *fetchitfido* reputation points. Click the reputation button near the bottom left corner of this message box. Thank you!

quote

12-26-2011, 10:54 PM #13

ShawnV
Master Member

Join Date: Aug 2007
Location: Greensboro, NC
Posts: 2,680

ShawnV's Photos

2000 SW2

Re: 1997 Fuel pump replacement

I don't know about the '93 but there seems to be enough room. I've done a couple of third gens since this historic repair took place.

REWARD EXCELLENCE!

Rate the quality of this post and help *ShawnV* reputation points. Click the reputation button near the bottom left corner of this message box. Thank you!

quote

04-19-2013, 06:54 PM #14

highaltitude
New Member

Re: 1997 Fuel pump replacement

Join Date: Apr 2013
Posts: 7

1997 SW1

Holy cow!!!!

I can lift the rear seat cushion out of my 97 SW1 and the fuel pump is staring me in the face, on top of the fuel tank.

I assumed all you would need to do is disconnect the fuel lines and wiring terminal, to remove and replace the fuel pump, without removing fuel tank.

BTW, I have the same starting issues and delays, described in this thread.

I had to replace an alternator and three starters, so I think it may be cost effective to replace a weak fuel pump to save on alternator and starter replacements. The alternator is in a very bad location, between power steering pump and starter, between engine and firewall. It is removed and replaced by going thru right front wheelwell.

REWARD EXCELLENCE!

Rate the quality of this post and help *highaltitude* reputation points. Click the reputation button near the bottom left corner of this message box. Thank you!

quote

05-13-2013, 02:06 PM #15

[theredneckvlog](#)
Junior Member

Join Date: May 2013
Posts: 16

Re: 1997 Fuel pump replacement

Quote:

> Originally Posted by **highaltitude**
> *Holy cow!!!!*
>
> *I can lift the rear seat cushion out of my 97 SW1 and the fuel pump is staring me in the face, on top of the fuel tank.*
>
> *I assumed all you would need to do is disconnect the fuel lines and wiring terminal, to remove and replace the fuel pump, without removing fuel tank.*
>
> *BTW, I have the same starting issues and delays, described in this thread.*
>
> *I had to replace an alternator and three starters, so I think it may be cost effective to replace a weak fuel pump to save on alternator and starter replacements. The alternator is in a very bad location, between power steering pump and starter, between engine and firewall. It is removed and replaced by going thru right front wheelwell.*

Under the seat. No friggin way. Good to know.

REWARD EXCELLENCE!

Rate the quality of this post and help *theredneckvlog* reputation points. Click the reputation button near the bottom left corner of this message box. Thank you!

quote

05-13-2013, 02:07 PM #16

[theredneckvlog](#)
Junior Member

Join Date: May 2013
Posts: 16

Re: 1997 Fuel pump replacement

Quote:

> Originally Posted by **theredneckvlog**
> *Under the seat. No friggin way. Good to know.*

Still good to know! Thanx again.

REWARD EXCELLENCE!

Rate the quality of this post and help *theredneckvlog* reputation points. Click the reputation button near the bottom left corner of this message box. Thank you!

quote

08-23-2013, 11:46 PM #17

[john92saturn](#)
Junior Member

Join Date: Jun 2006
Location: Dewitt Michigan
Posts: 39

2002 SC1
2000 SL2

Re: 1997 Fuel pump replacement

OK I just pulled the tank from a '96 sl1, not too bad thanks to this thread!
A couple of things:
With a low amount of lift as shown at the beginning, on jack stands, the tank straps will prevent tank removal - unless you remove them! I struggled with this for 15 minutes.
Push the passenger side strap straight up and disengage, then rotate the assemble around until you can wiggle the other one free. The tank is now ready to fall into your lap! I used a cheapy car jack and a block to hold the tank up while doing all of this - it worked ok.
Next, the fuel lines from the body to the tank are retaiined by an OPEN strap, I thought the strap was a loop. The open strap (like a hook) allows you to just push the 3 lines up and over to the outside - now they are free! DON'T shove and bend them back toward the front of the car to clear this strap! They will kink - this is bad. Just shove them up a bit and out from the strap - Easy!

REWARD EXCELLENCE!

Rate the quality of this post and help *john92saturn* reputation points. Click the reputation button near the bottom left corner of this message box. Thank you!

quote

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